FISH & WILDLIFE BRANCH

PROJECT SUMMARIES

2012-2013

Yukon
Environment

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Bat Monitoring and Conservation

Bat sensitivity to landscape and climatic variation makes them a key focal species for a monitoring program. In addition, monitoring key bat habitat has the potential of finding previously unrecorded bat species in Yukon. We have been engaging the public and promoting stewardship and bat conservation by providing viewing and other educational opportunities.

A new threat has recently emerged through the rapid spread of a disease (White-nose Syndrome). This may require that the affected bat species, including the 2 species known in Yukon (Little Brown Bats, Northern Long-eared bats) receive an emergency listing as Endangered species.

Project Description: What we're going to do

We will continue to monitor colonies of marked bats to assess their response to climatic variation. Work will focus on monitoring populations of banded bats in bat houses erected in southern and central Yukon in order to assess population size and impacts of annual climate variation.

We will also include a disease monitoring component to assess if White-nose Syndrome is present in Yukon bat populations. This work will also include public participation where possible and be the foundation for a wildlife viewing event to promote wildlife stewardship.

Management Implications: Why we're doing it

Bat monitoring describes population changes, may discover and document disease introduction (e.g. White-nose Syndrome, a national disease concern in bats) and engage the public in stewardship and education opportunities with this very viewable animal.

Project Activities: How we'll get it done

The focus this year will be on monitoring during the summer months the colony size, survival, and recruitment of marked bat colonies at bat houses already established across southern Yukon. Considerable effort will be also expended on wildlife viewing initiatives for bats and fielding questions and concerns about bats in Yukon.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Collared Pika and Collared Lemming Monitoring

Pika are highly susceptible to changing climatic conditions. They have recently been assessed by COSEWIC as a species of "special concern" and we anticipate that they will be listed in the federal Species at Risk Act. We need to develop an inventory and monitoring system that is cost effective and community-based to monitor change in pika populations. This project will develop that system, in cooperation with Yukon Parks and volunteers.

In conjunction with pika monitoring in Tombstone Park we will continue to refine our knowledge of the distribution of collared lemming.

Project Description: What we're going to do

We will use basic and non-invasive survey methods, relying on park rangers, naturalists, and volunteers from the community, to determine the presence or absence of pika in our study areas. We will compare data from year-to-year to assess trends in the occupancy of suitable habitat.

Additional occupancy grids in Tombstone Park will be monitored for lemmings in conjunction with pika monitoring. These grids will help us better define the range of this rare lemming.

Management Implications: Why we're doing it

This project will provide information on key habitats and population trends for Species at Risk status assessments and management planning. Additionally, it contributes to wildlife and ecological monitoring of baseline conditions in Yukon Parks. Overall, it becomes one method for YG to report on the impact of climate change on biodiversity.

Project Activities: How we'll get it done

We will select 60 to 100 suitable talus patches in Tombstone and Kusawa (in progress) territorial parks and survey them for pika presence 2 or 3 times in August. Our survey methods are basic and non-invasive – we look for hay piles and listen for pika calls. Park rangers and naturalists, and volunteers from the community are the preferred approach for collecting field data. If necessary, we will access some locations by helicopter.

We will identify and map reference areas for collared lemmings and in association with Environmental Assessment section, develop assessment protocols in preparation to address development proposals that interact with the key habitats of this sensitive species.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Community Ecological Monitoring Project

Ecological Monitoring provides an early warning of change to the natural environment and contributes to understanding the resilience and vulnerabilities of Yukon's boreal forest food web to landscape changes including climate change. It tracks the natural variations year to year in the forest, and provides a foundation of understanding from which to discuss and describe trends to Yukoners, and whether there are emerging issues in the environment that require mitigative action.

The Community Ecological Monitoring Project (CEMP) is based on the established long-term monitoring program in the Kluane Lake and Haines Junction areas. This program has been expanded and now includes Mayo, Watson Lake, Faro, Whitehorse, and Burwash. The knowledge base includes the collection of traditional and local ecological knowledge as well as scientific measures.

Project Description: What we're going to do

CEMP will continue to monitor key components of the boreal forest food web using standardized methods across a network of sites in the Yukon. The data we collect will be analyzed for trends on forest food products, keystone species population trends, and changes in furbearer species density. We will also collect local knowledge on environmental conditions. The CEMP central database is continually updated. In addition, a formal review, description and strategy of the program will be concluded by October for consideration in determining program direction, priorities, and continuance.

Management Implications: Why we're doing it

Long-term monitoring of the key components of the boreal forest food web gives us baseline data for understanding the effects of climate change. These effects can have management implications (e.g., trapper success, human-bear conflicts). The results of monitoring programs help explain variation in cycles of hare, small mammals and furbearers.

Monitoring carried out within the framework of adaptive management shows how well management actions are working and ultimately reduces the risk of long-term detrimental ecological effects.

CEMP monitoring provides baseline data on indicators of biodiversity and ecosystem health for assessment of development activities.

Project Activities: How we'll get it done

We will continue to measure abundance of key boreal food web components—berries, cones, mushrooms, spruce beetles, mice and voles, and snowshoe hares—on standardized monitoring sites during the summer, using consistent methods among regions. We will also continue monitoring the abundance of small and medium-sized carnivores using track counts in 5 communities (Mayo, Faro, Watson Lake, Kluane, and Whitehorse). Local observers and regional staff, conservation officers and Biodiversity Section staff will be involved with these surveys.

We will maintain our annual interviews with local residents in the Mayo area about conditions on the land and their subsistence activities. Local students will conduct these interviews.

We will continue to support the publication of articles about CEMP in community newspapers on a regular basis.

Todd Powell, Manager, Biodiversity Programs

Ground-based Photo Monitoring

Mineral licks are essential to the health of many wildlife populations. The Wildlife Key Area database incorporates known mineral licks where they have been identified, but often with little context or assessment of the species that may be making use of them.

This will be an experimental application and assessment of passive camera traps as a method to monitor mineral licks and to develop a framework for application in environmental assessment and other wildlife monitoring.

Project Description: What we're going to do

We will continue to maintain the motion-activated cameras that are in place at mineral licks near Faro and on the Nahanni Range Road. These cameras document the species using the licks, and the timing and frequency of lick use.

We will critically examine the images and information gathered by the cameras and assess the utility of this method to provide information useful in assessing potential impacts of development activities.

Additional known licks in the region in the MacPass area near the Yukon/NWT border, an area facing significant development pressure, have been identified as potential sites where traps could be established.

Management Implications: Why we're doing it

Detailed information on seasonal use of mineral licks and other key areas for wildlife will allow for more informed environmental assessments and inform other wildlife management decisions. Species specific use patterns and timing may help us to refine our recommendations to mitigate land use and development proposals.

Project Activities: How we'll get it done

We will collaborate with other Regional programs to standardize the approach, analysis and application of motion-activated camera traps to the environmental assessment process.

We will maintain the existing camera sites, report on project results, and consider communication opportunities of the images.

Matt Clarke, Liard Regional Biologist

Gyrfalcon Inventory and Monitoring

This monitoring project will examine the productivity of selected Gyrfalcon nest sites in the Southern Lakes region, contributing to the existing long-term data for this species in the region. The British Columbia government contributes to the joint management of this trans-boundary population.

Project Description: What we're going to do

We will conduct annual nest site productivity monitoring at the key period of nesting. This information is shared with British Columbia in a joint management/monitoring program. When the field survey is completed, we will discuss trans-boundary population status with British Columbia.

Management Implications: Why we're doing it

This is the approximately 20th year of monitoring of these nest sites The Gyrfalcon monitoring program partially fulfills a commitment to the Yukon/BC Memorandum of Cooperation. Nest occupancy and productivity data can also be used for status assessments and a Non-Detrimental Finding for CITES, if necessary.

Project Activities: How we'll get it done

An aerial survey using a helicopter will be done in late June.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Muskrat Push-up Survey, Old Crow Flats

An aerial survey of muskrat push-ups on the Old Crow Flats will serve as an index of population size. This project is a continuation of the YNNK Old Crow Flats IPY (International Polar Year) project and is done in partnership with McGill University.

Project Description: What we're going to do

This aerial survey is one component of a larger project looking at muskrat populations and harvest on Old Crow Flats. Push-up count results will be related to the body condition and harvest data collected by McGill researchers.

Management Implications: Why we're doing it

In the 1980s, researchers developed an index of muskrat abundance using the number of pushups on lakes. This index was intended to be used to monitor the status of muskrats across the Old Crow Flats. Low harvest in recent years has resulted in a low priority for the survey however new research on muskrats, funded by the International Polar Year, has revived interest in the status of muskrats.

Project Activities: How we'll get it done

This survey is somewhat time-sensitive; flights need to be done after the snow has melted but while lake ice is still land-fast. Depending on the year, conditions may be right anytime from late April to early June.

Push-up count results will be related to the body condition and harvest data collected by McGill researchers.

Martin Kienzler, N.Yukon Regional Technician

Impact of Climate Change on Snowshoe Hare Survival

Snowshoe hares have evolved to be camouflaged from predators by changing their coat colour with the seasons. If they are unable to adapt to the increased variability in the timing of snow melt and arrival as a result of climate change their survival may be impacted. Trappers are concerned that as a key species in the "food web" of the boreal forest, changes in snowshoe hare may have an effect on furbearer populations. In this cooperative study with University of British Columbia, we will examine whether snowshoe hare in southwestern Yukon have adapted to annual climatic variation in the timing of their coat colour change.

Project Description: What we're going to do

Snowshoe hare will be captured in April 2012 and monitored using radio-telemetry. Survival estimates will be calculated in relation to the timing of coat colour changes and snow melt. This information will be compared with the existing long term data on hare survivability in this region in order to assess recent climate effects.

Management Implications: Why we're doing it

By evaluating and understanding snowshoe hare adaptation, consequences to harvested furbearer populations will be better described. This project will also further our commitment to increasing our understanding of ecological processes in relation to climate change.

Project Activities: How we'll get it done

The University of British Columbia is the major project partner, providing up to 95% of the resources to conduct the project with EY contributing staff time for project design and supporting a small amount of equipment purchase.

A sample of about 15 snowshoe hare will be radio-collared and monitored in the Kluane Lake area, beginning in April 2012. The final reports discussing hare productivity will be produced at project end by principal investigators and will include a thesis and scientific journal articles.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Species at Risk

This project delivers Species at Risk programs and administration that meet Yukon government objectives and requirements in National/ Provincial/ Territorial Agreements, such as the National Accord for the Protection of Species at Risk, the Federal Species at Risk Act and the development and eventual implementation of Yukon's *Species at Risk* legislation. Emphasis is on species important to Yukoners, including grizzly bears, polar bears, caribou, and bison.

Project Description: What we're going to do

These activities involve the coordination and delivery of all the species at risk investigations and status reporting. It also supports Yukon's representation in national and international forums and committees for species at risk concerns, coordinating management and investigations with regional and species programs staff, and addressing topics of public and political concern as they arise.

Management Implications: Why we're doing it

This program supports Yukon's ability to adaptively manage for harvested species at risk, list and rank species in Yukon, and inform planning activities of the diversity and status of species affected by both human activity and climate change.

Project Activities: How we'll get it done

Activities for this project are:

- Review national species at risk status assessment reports.
- Lead technical input from Yukon into national species status assessments.
- Coordinate/participate in management planning for Yukon species at risk by providing technical representation on national species at risk teams for key species (e.g. Northern Mountain caribou, bison, polar bears)
- Prepare reports on investigations of species at risk deemed as priority.
- Participate in national species at risk forums (COSEWIC, RENEW, General Status, CITES) through ongoing discussions and attendance at required meetings.
- Develop or update territorial general and sub-national status ranks for vertebrate species (fish, mammals, amphibians, resident birds, raptors)

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Yukon Conservation Data Centre

The Yukon Conservation Data Centre (YCDC) was established in 2002. As part of an international network, its role is to gather, maintain, and distribute information on wildlife and ecological communities of conservation concern in the territory. YCDC is the primary body responsible for status rankings for all species in Yukon.

YCDC's database currently lists and tracks information on the locations and conditions of 275 species of conservation concern in Yukon. This information is available to anyone, but is primarily used in environmental assessment, land-use planning, conservation actions, recovery planning, and conservation status assessments. The YCDC also produces materials and hosts workshops designed to help people learn about species of conservation concern. As the central source for rare species and ecosystem data, YCDC eliminates redundancy by identifying data needs and coordinating field studies across the territory.

Project Description: What we're going to do

This on-going project is the central source for Yukon's rare species and ecosystem data. We will continue to collect data from multiple sources and serve as a point of contact for the public and government for all information related to rare or at-risk species in Yukon.

We will continue to assign and update rankings for all Yukon species and play a proactive role in identification of rare elements (plants, animals, and ecosystems) and their conservation. This will feed directly into general status reporting of species of conservation concern.

Management Implications: Why we're doing it

By providing information on rare species and ecosystems the YCDC is able to support all agencies involved with land use planning, species at risk recovery planning and environmental impact assessments.

YCDC meets government obligations to manage and conserve species at risk under the National *Accord for the Protection of Species at Risk* and the federal *Species at Risk Act*. The proposed *Yukon Species at Risk Act* also requires status assessments and ranking of species of conservation concern.

Project Activities: How we'll get it done

We will continue to add information about rare species that we collected between 2003 and 2009 to the YCDC's database. We will also update the ranks of plant and animal species in the database, concentrating on those that are globally and nationally of conservation concern

We will develop a strategy to house data on wide-ranging species so that these data can be disseminated along with more easily mapped elements.

We will continue to publish outreach materials in collaboration with other departments including a Yukon Species at Risk booklet, species information sheets for field identification, and Watch and Track lists.

In February we will hold public species at risk information workshops and produce the quarterly project updates.

We will also continue to provide ongoing support to the national General Status Ranking process.

Bruce Bennett, Coordinator, Conservation Data Centre

Bear Den Survey in the Rackla Region

The upper Stewart River watershed has been extensively staked for mineral exploration in recent years and there is a proposed road to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development.

Knowledge of key areas for bear denning will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Project Description: What we're going to do

We will use helicopters to survey an area in the upper Stewart River watershed, mostly along the Beaver and Rackla rivers, where there is a high level of mineral staking and exploration. We will fly a random stratified blocks with focus on areas with highest probabilities of denning and areas with poor den sightability. We will truth all aerial observations with ground checks.

Management Implications: Why we're doing it

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The Wildlife Key Area (WKA) Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can receive a higher level of protection.

Knowledge of regional wildlife abundance and the distribution of important and high quality habitats will provide the foundation for developing population and habitat goals.

Project Activities: How we'll get it done

This survey will take 9-10 days for 1 crew to complete, flying 3 days over 3 intervals during the break-out period for denning. Surveys will be conducted in late April and throughout May.

The data will be used to map bear denning habitat, we will create a key areas map and a probability-based den map.

Ramona Maraj, Carnivore Biologist

Grizzly Bear Diet-based Trophic Relationship and Population Study (Southern Lakes)

The population study of grizzly bears in the Southern Lakes region began in 2009, in collaboration with the area's First Nations. The study area covers the important grizzly bear ranges between Tagish Lake and Kusawa Lake, from the Alaska Highway south to the British Columbia border. This study has benefitted from two years of preliminary investigation and is expected to take an additional four years for completion. Current estimates of grizzly bear numbers and density are based on local knowledge, outfitter experience, harvest history, and expert opinion. This multi-year study will provide a solid estimates of population and genetic make up and information on grizzly bear habitat use (including important den use and foraging areas in the region). Nutritional status, seasonal movement patterns and an index of annual cub production and survival will also be outcomes of this work.

Project Description: What we're going to do

We will use the existing sample of radio-collared bears to locate and collar additional female bears. To increase the sample of collared bears we will attempt additional captures at remote ground trap and DNA grid sites.

Radio-collars will provide information on movement/habitat use, survival, and reproduction of bears. Scats will be collected during capture and opportunistically from dens, trails and trap sites to augment tissue sample analyses. Information on bear, caribou and moose distribution will used to assess the degree of seasonal overlap among these key species.

DNA hair-snagging stations will be distributed across the range to gather information on individual bears and establish relatedness and estimate role of immigration and emigration for this population.

Management Implications: Why we're doing it

We suspect that the combination of human-caused mortality and decreases in ungulate densities are causing a decline in the grizzly bear population in the Southern Lakes region. We need the information from this study in order to sustainably manage this population. In addition, regional boards and councils have requested information on the relationship between bears and the ungulate species, specifically focusing on the role ungulates play in the diet of bears.

We need this information to make decisions about the management options in order to reduce mortality. Management options can include quotas, programs to reduce human-bear conflicts, and the management of habitat through land-use planning and environmental assessment.

Project Activities: How we'll get it done

We plan to re-collar and collar 5 to7 bears this year. We will focus our efforts on zones in the study area where bears are in high density or where bears have not

yet been trapped or captured. Monitoring collared bears will continue at least until 2014.

DNA sampling stations will be established in a grid pattern over the study area, and monitored for at least two sampling periods. Grids will be established in the late spring and sampling sessions in the mid summer period.

Ramona Maraj, Carnivore Biologist

Wolf: Humane Trapping Extension Project

In promoting and supporting the trapping industry and lifestyle, we have a responsibility to promote humane trapping methods to minimize suffering for trapped animals and to promote stewardship and respect for wildlife in management programs. This program supports extension and education programs intended for trappers who are interested in improving their trapping success and the application of humane trapping methods.

Project Description: What we're going to do

This is an extension of a one-year project initiated in 2010-2011 but has been in effect, informally, for more than 10 years. The objective of this project is to provide materials and demonstrate proper setups on the trappers' own trap lines. An assessment of the humane attributes of these snares compared to more commonly used snares may require a large sample of snared wolves and will be a factor in deciding how long this program will run.

Management Implications: Why we're doing it

While there are no specific humane trapping standards for wolves, our long experience in the field of wolf management has helped us to improve capture efficiency and to reduce suffering of wolves caught in snares. Carnivore management programs in particular are subject to national and international scrutiny and as an agency working in this area it is essential that we demonstrate resource stewardship.

This work also provides the trapping community with sufficient skills and training to maintain the sustainability of the activity and their credibility when advocating for improved standards.

Project Activities: How we'll get it done

We will travel to select active trap lines to provide instruction and technical advice to trappers who are using the newer quick kill snaring equipment.

Coordinator, Wolf Management Program

Angler Harvest Surveys

Angler harvest surveys are a central data source for fisheries management in Yukon. We relate angler survey data and other sources of harvest, to stock assessment information and estimates of lake productivity to determine an appropriate management strategy for the fishery.

Based on this analysis, we will implement corrective measures such as education or regulation changes for overexploited stocks.

Project Description: What we're going to do

This is an ongoing project. Each year, we conduct angler harvest surveys on several high-use recreational fisheries in Yukon. The primary goals of these surveys are to determine angler effort, catch rates, harvest, and to gather biological data from fish harvested by recreational fisheries. Priority areas for 2012 are Ethel Lake, Frenchman Lake, and the Southern Lakes spring grayling fisheries. Results of these surveys will be compared with past results to determine trends in the fishery and the sustainability of the current level of angler harvest. This information will guide allocation and regulation decision making processes.

Management Implications: Why we're doing it

Angler harvest surveys, in combination with other fish and fishery-related assessments, are used to determine if the angler effort and harvest are sustainable under the existing regulation regime. Regularly monitoring of key harvested stocks can also avoid costly interventions if harvest is too high.

Ethel Lake has been identified by the First Nation of Na-Cho Nyak Dun and Regional staff as a priority and in the State of Yukon Fisheries (SOYF) as being harvested near sustainable limits. This lake has not been surveyed since 2003. Frenchman Lake was identified in the SOYF as a lake of concern for lake trout and pike harvest. This lake has not been surveyed since 2005. A roving creel to establish status of Southern Lakes spring grayling fisheries is also a priority.

Project Activities: How we'll get it done

Contractors will carry out surveys on Ethel and Frenchman lakes, while fisheries staff will carry out a survey on spring grayling fisheries in the Southern Lakes region.

Field workers conduct face-to-face interviews with anglers on selected sample days throughout the summer. Workers ask a standard set of questions about the social and biological aspects of the fishery, such as the time spent angling and the species and number of fish caught.

Oliver Barker, A/Senior Fisheries Biologist

Aquatic Health Monitoring for Placer Mining

This project comprises the Fish and Wildlife Branch's contributions to the Fish Habitat Management System for Yukon Placer Mining. We complete the annual monitoring component for Aquatic Health Monitoring and participate in the adaptive management process of the Regime.

Project Description: What we're going to do

This is an ongoing project to monitor how placer mining activities are affecting run-off water and stream organisms to ensure established standards are appropriate. Field work primarily takes place in mined watersheds in coordination with the federal Department of Fisheries and Oceans (DFO) and Yukon Energy, Mines and Resources. Forty sites are sampled annually. The final selection of these sites takes place at a coordination meeting each spring. Data gathered is shared to support regulatory decisions made under the Placer Regime.

Management Implications: Why we're doing it

The 2003 Record of Agreement commits the Yukon government, Council of Yukon First Nations and DFO to develop and implement a new regime for placer mining and its impacts on fish habitat. Environment Yukon and DFO are jointly responsible for carrying out the Aquatic Health Monitoring as laid out in the Aquatic Health Monitoring Protocol.

In combination, the Aquatic Health monitoring, the Water Quality Objectives monitoring, and the Economic Health monitoring inform the adaptive management process. Through this process, decisions are made to change discharge standards of placer mining to protect the health of the aquatic environments. The system is of great importance in affording sufficient protection to freshwater fish (and salmon) and their habitat and is therefore a joint concern of DFO and Yukon Fisheries.

Project Activities: How we'll get it done

Field work protocol is detailed in the Yukon Placer Secretariat Watershed Health Monitoring Protocol. In a typical year, Environment Yukon will sample 15 sites by helicopter and five sites will be sampled by boat / road access.

Field work will be done between July 15th and August 7th each year so that sampling of aquatic benthic macroinvertebrates is done consistently.

Results of the monitoring will be communicated through the Yukon Placer Secretariat in the Annual Monitoring Report.

Oliver Barker, A/Senior Fisheries Biologist

Fish Health Monitoring and Other Laboratory Functions

Monitoring the health of local fish enables Yukoners to have access to a healthy supplement of fish in their diets. Healthy fish also contribute to the health and sustainability of fish populations.

This project supports our ability monitor fish health and to provide quick feedback to the public if concerns about fish disease or parasite issues arise.

Project Description: What we're going to do

This is an ongoing project that includes several activities. These activities include conducting laboratory analyses of fish and other fish-related biological specimens as well as participating in sampling of fish for contaminant levels. We will also co-ordinate aquatic animal health activities (including the disease screening for introduced and transferred fish) and identify fish diseases and parasites.

Management Implications: Why we're doing it

The Yukon public expects us to maintain a system to monitor fish populations in order to detect any problems as they arise. This project also supports our ability to provide quick feedback to the public if concerns about fish disease or parasite issues arise. Ongoing monitoring contributes to the safety of fish stocks through the maintenance of appropriate screening processes.

Project Activities: How we'll get it done

We will monitor the health of fish populations throughout Yukon by examining diseased fish turned in by the public or caught in netting studies. Some work will focus on areas and stocks that have been identified as having potential or actual disease or parasite problems.

We will continue to collect and age between 250 and 500 fish annually. Age data will be incorporated into reports on fish populations where appropriate.

We will assess fish diet through the examination of stomach contents as part of ongoing stock assessments.

We will monitor the health of hatchery-raised fish at the Whitehorse Rapids Fish Hatchery through disease screening to ensure that no diseased fish are released into the wild.

We will co-ordinate the collection of samples and their analysis for contaminants and communicate results to the public (in part through annual updates to the Fisheries Synopsis) and will continue to participate on the Yukon Contaminants Committee.

Disease information will be incorporated, as necessary, into the *Common Parasites of Yukon Fresh Water Fishes* brochure. Information will also be provided directly to the public when concerns are raised or fish with health problems are submitted for inspection.

Oliver Barker, A/Senior Fisheries Biologist

Fish Stocking Program

This program creates and maintains fishing opportunities for Yukoners at stocked lakes throughout the territory. Anglers appreciate the diversity of fishing opportunities available through the stocked lake program; rainbow trout and Arctic char (only found in stocked lakes) are among the top six preferred species. Possession and catch limits are more liberal on stocked lakes. The program has a good deal of community support and Yukon Fish and Game Association (YFGA) volunteers are involved in the stocking program.

Project Description: What we're going to do

This is an ongoing program. Suitable pothole lakes are stocked on a rotating basis, providing easily-accessible fisheries that are particularly attractive to families and first-time anglers. This program also involves an educational component, including interactive programs on lake stocking, angling pressure and responsible angling practices.

Management Implications: Why we're doing it

The maintenance of the stocking program (currently 22 lakes across Yukon) provides a tremendously important set of opportunities for Yukon anglers: over 20% of resident anglers fish the stocked lakes and Yukoners spend over 6700 days angling in stocked lakes each year. Over 90% of Yukon anglers surveyed said that the stocking program was 'very important' or 'important' to them (Survey of Recreation Fishing In Canada 2005).

Wild stocks of fish in Yukon are slow-growing and susceptible to over harvest if subject to un-regulated fishing pressure. Providing alternative angling opportunities close to population centers alleviates some of the fishing pressure on wild stocks.

Project Activities: How we'll get it done

We will continue to receive fish from certified, disease free hatchery in BC and fry produced from Whitehorse Rapids Fish Hatchery. These fish will be stocked in pothole lakes in conjunction with COSB and Regional staff, volunteers, and Yukon Fish and Game Association (YFGA).

We will

- continue investigation into feasibility of eyed egg imports to supply stocked lakes demand for rainbow trout;
- continue to provide opportunity for new and current anglers to catch fish in readily-accessible lakes near their communities;

- deliver educational content related to lake stocking, angling pressure, and responsible angling;
- renew signage for stocked lakes across Yukon; and
- promote the program and related educational events through contact with media and project partners such as YFGA.

Oliver Barker, Fisheries Management Biologist

Fisheries Stock Assessment and Monitoring

Stock assessments are one of the basic information needs that support fisheries management decision making. They provide the data needed to develop estimates of harvest potential and to support management strategies that are used to avoid or address over-harvest situations. They provide the oversight that ensures that management approaches are properly supported, from education campaigns to regulatory amendments, and to allow the department to evaluate the effectiveness of their fisheries programs. Stock assessments are the major source of long-term fisheries data and are collected in a systematic and consistent fashion year after year.

Project Description: What we're going to do

This is an ongoing annual project. Field work begins in May and is completed within the open water season as determined by fish biology, water temperature, and logistical constraints. Where appropriate, data are used in conjunction with other data (e.g., Angler Harvest Surveys) to produce summary reports for waterbodies of interest. We will develop posters and other communication methods for communities as is appropriate or required.

Specific project priorities are identified early in the season and considered in conjunction with the regional programs, First Nations, and Renewable Resource Councils. Community-based work plans identify fisheries stocks of particular concern.

Field activities vary based on the type of monitoring needed. Based on the level of risk (as outlined in the Status of Yukon Fisheries) netting studies, mark-recapture evaluations, or visual assessments are done and focus on indicator species like lake trout and Arctic grayling.

Management Implications: Why we're doing it

These surveys are the base data used in assessing the state of the fisheries resources and are used to make management decisions. Ongoing and regular evaluation of important stocks is necessary to detect and respond to changes in a timely manner. The information collected in this work allows the department to manage fish resources, to maintain healthy fish stocks and sustainable harvest opportunities, to assess the status of fish stocks, and to monitor changes over time that may be occurring due to anthropogenic (e.g., harvest) and environmental factors (e.g., climate change).

Project Activities: How we'll get it done

This is the fourth year we will be using the SPIN (Summer Profundal Index netting) method to assess key populations of lake trout. This method uses stratified random gill nets to capture lake trout and provides estimates of density

and abundance. We will carry out SPIN surveys on Quiet, Frenchman, Fish, and possibly other lakes.

We are developing underwater assessment methods to help assess key harvested populations of Arctic grayling. Surveyors wearing dry suits and snorkel gear swim streams and count the number of grayling they see. The proportion of the number of known tagged fish seen by snorkellers is measured. Surveys produce estimates of grayling density and provide basic habitat assessments. This year we will assess Lubbock River, Lynx Creek and Moose Creek.

We conducted a very successful pilot assessment of burbot stocks in Little Fox Lake in autumn 2011. We will return to Little Fox Lake in spring 2012 to continue this study, and will conduct a similar assessment of burbot stocks in Pine Lake.

This year we will address a backlog of several years' of fish aging structures to finalize analyses in support of stock assessments from 2009-2011.

We also plan to update lake productivity assessments, through two days of lake sampling supported by fixed-wing aircraft.

Oliver Barker, A/Senior Fisheries Biologist

Biophysical Data and Plant Specimen Management

Biophysical (vegetation) plot data are the foundation for developing vegetation or ecosystem classifications and maps that support wildlife habitat management. Knowledge of the distribution, characteristics and functions of ecosystems is valuable for habitat description and assessment, such as suitability mapping, forest management, ecological monitoring, environmental impact assessment, land use planning, and habitat and conservation area planning and protection.

Over the past 2 years Habitat Programs and IMT have been converting/uploading/entering the approximately 30 years of biophysical/vegetation plot data into a new web-based application (Yukon Biophysical Information System), with the intent that all plot-based biophysical data will be available to anyone requiring this information and that there will be a manual that describes field data collection protocols.

Project Description: What we're going to do

A field manual will be developed that describes the Yukon standards for collecting biophysical (soil, site, and vegetation data). We will use the British Columbia manual (*Field Manual for Describing Terrestrial Ecosystems*) as our model (http://www.for.gov.bc.ca/hfd/pubs/docs/mr/mr074.htm) and will conform to the database standards of YBIS. For projects with non-digital data or for project databases that cannot be converted to YBIS, manual data entry will occur.

This project also supports the ongoing maintenance of the Yukon Herbarium, the only public herbarium with a comprehensive (although incomplete) collection of Yukon plant specimens.

Management Implications: Why we're doing it

The production of the biophysical data collection field manual will ensure data is collected to the same standard, which increases its usability and increases efficiency in managing and analyzing data from different projects. This project activity will be particularly useful for the Ecological Land Classification (ELC) program and wildlife habitat assessment and management.

A well-maintained herbarium enhances the ability of ecologists to learn the Yukon flora and to understand its ecosystems. A plant specimen collection is useful as a reference for anyone undertaking biodiversity or vegetation work to assist with species identification. It is also used for education purposes by Yukon College instructors. Regular maintenance and updates are required to maintain the value of the Herbarium.

Project Activities: How we'll get it done

With contractor support we will develop a draft field manual for testing this summer. The final version of the manual will be completed following the field season.

Ongoing data entry will be completed by a contractor.

Regular maintenance and updates for the Yukon Herbarium are done through the use of small contracts. New plant specimens are mounted, labeled and deposited in the herbarium, and the database is updated. The contractor also provides a report that outlines tasks that have been completed and are outstanding; these reports inform the next steps required.

Val Loewen, Habitat Inventory Coordinator

Habitat Protection Areas Inventory and Assessment

This project funds inventory and assessment needs for the Pickhandle Lakes, Tagish Narrows, Lewes Marsh, Whitefish Wetlands, Lhutsaw, Ddhaw Ghro and Nordenskiold Habitat Protection Areas (HPAs). All information and data gathered from these assessments is used to support and inform the management planning as required by Final Agreement implementation obligations.

Project Description: What we're going to do

This is a multi-year project. Assessment and inventory projects within the new HPAs will be directed by the respective steering committee and the advice of technical staff of the Fish and Wildlife Branch and/or First Nations.

Our objective is to get more up-to-date information about habitat use, semi-aquatic mammals, biodiversity, and long-term ecological monitoring needs for Pickhandle Lakes, Tagish Narrows, Lewes Marsh, Whitefish Wetlands, Nordenskiold, Lhutsaw, and Ddhaw Ghro Habitat Protection Areas. The Nordenskiold management plan was approved in 2010, while Lhutsaw will undergo a 5 yr review of its existing plan and the Ddhaw Ghro plan is awaiting final approval. The plans provide direction for implementation activities.

Management Implications: Why we're doing it

This information will inform management planning for these areas by supporting each steering committee in identifying priorities for management, data gaps, and by engaging First Nations in these assessments. Monitoring in HPAs with approved management plans supports plan implementation.

Project Activities: How we'll get it done

Timelines and deliverables for Pickhandle Lakes, Lewes Marsh, Tagish Narrows, and Whitefish Wetlands will be developed in conjunction with those steering committees.

Baseline inventory assessment of Lewes Marsh, Tagish Narrows and Whitefish Wetlands will be conducted with guidance from the steering committees. A report would be completed after any survey.

This year, we will do the muskrat survey recommended in the Nordenskiold HPA plan.

Wetlands are a good indicator of long term ecological change. Options for monitoring indicator species will be determined in cooperation with Biodiversity Programs. A catalogue of reference photos from HPA wetlands to monitor change will be maintained at the road accessible HPAs (Lhutsaw, Nordenskiold, Pickhandle, Lewes Marsh, Tagish Narrows). Baseline inventory work including water quality assessment in the Pickhandle Lakes HPA will be completed

Heather Clarke, Habitat Biologist

Local Knowledge Habitat Interviews: Dawson Range

The Dawson Range has been extensively staked for mineral exploration in recent years and there is a proposed all-season road to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development. Local knowledge interviews have been conducted in Dawson as a part of the regional land use planning process, but none have been conducted for areas further east in the Dawson Range. This project will address this information need.

Project Description: What we're going to do

We will conduct local knowledge interviews in a workshop format or individually with knowledgeable local residents in the Carmacks and Pelly Crossing areas. We will map seasonally important wildlife habitats based on the observations of participants.

We will map WKAs based on these interviews for species and seasons that fit into the WKA database.

Management Implications: Why we're doing it

Knowledge of key areas and other seasonal habitats used by wildlife in the Dawson Range will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The WKA Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can receive a higher level of protection.

Data collected during these surveys in combination with other distribution data contribute to habitat suitability modeling.

Mapping important wildlife habitats in this area with high levels of industrial activity is recommended in the *Community-based Fish and Wildlife Work Plan for the Little Salmon/Carmacks First Nation Traditional Territory, 2011-2015*.

Local knowledge interviews to map important wildlife habitats are proposed as part of the draft *Proposed Fish and Wildlife Baseline Data and Monitoring Plan: Klondike Plateau-Dawson Range*.

Project Activities: How we'll get it done

These interviews will be conducted during the year as opportunities arise and when our partners are prepared to organize workshops.

The data will be incorporated into the WKA database when it is next updated.

Mark O'Donoghue, N. Tutchone Regional Biologist

Regional Land Use Planning Preparation

An important part of land use planning is to understand where ecologically sensitive and important wildlife habitats exist to enable consideration of these habitats when prescribing land management scenarios. We have been compiling existing data and reports and gathering new information in support of the Dawson Regional Land Use Plan. Part of this new information is local knowledge of habitat suitability for focal species in the planning region. This information can be mapped and can feed directly into regional land use planning and environmental assessment processes.

Project Description: What we're going to do

Original local knowledge workshop participants will review the draft habitat suitability and Wildlife Key Area products that were developed based on the information they provided. The maps will then be refined before they are provided to the Dawson Regional Land Use Planning Commission (LUPC).

Management Implications: Why we're doing it

Mapped products will be used by the Dawson Regional LUPC to identify landscape management units where conservation values are a priority. These products will provide information for environmental assessment across the planning region, including the White Gold area,and will assist the Fish and Wildlife Branch in future wildlife and habitat management planning.

Project Activities: How we'll get it done

Community workshops will be held in in Dawson during May, 2012. Relevant changes will then be made to the habitat suitability rankings and WKA locations, with the final mapped products delivered to the Dawson LUPC by June, 2012.

Heather Clarke, Habitat Biologist

Habitat Assessment in the Southern Lakes

The management of wildlife and their habitat throughout the Southern Lakes region is dependent upon understanding species-habitat interactions and identifying the abundance, distribution, and availability of important habitat resources.

The Southern Lakes Wildlife Coordinating Committee (Habitat Working Group) identified the need for spatial habitat analyses to determine habitat suitability and availability for caribou and moose in the region.

Project Description: What we're going to do

This project aims to collect data necessary to conduct a habitat suitability analysis for caribou in the Ibex herd range and for moose in a recently-surveyed (2010) portion of the Southern Lakes region which overlaps with both the Ibex and the Carcross caribou herd ranges.

This is a two-year project. In Year 1, surface disturbance mapping and a moose habitat suitability model (i.e. RSF) will be completed. In Year 2, lichen abundance will be mapped across the Ibex caribou winter range and an Ibex caribou range habitat suitability model (i.e. RSF) will be developed.

Management Implications: Why we're doing it

Cumulatively, this information will be used to assess the overall availability of moose and caribou habitat across a large portion of the Southern Lakes region.

We need this information to inform both habitat and species management. It can help prioritize areas of conservation and management concern and will provide input to environmental assessment and habitat, wildlife, and land-use planning in the Southern Lakes region.

This information can complement existing information from collared animals indicating actual habitat use and areas of occupancy.

Project Activities: How we'll get it done

This year, a contractor will produce a map of anthropogenic (human-caused) linear and areal surface disturbance across the area covered by both the Ibex herd range and the portion of the moose study area not overlapped by the Carcross caribou herd range.

The moose habitat suitability model will be completed.

Next year, we plan to map the lichen abundance and distribution across the Ibex herd range by acquiring aerial lichen data and using this data to conduct a spectral analysis. As data allows, we will complete the Ibex caribou herd habitat suitability model and initiate the spatial analysis of multiple species and values across the southern lakes region.

Heather Clarke, Habitat Biologist

Wildlife Key Area Inventory Surveys

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The Wildlife Key Area (WKA) Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can receive a higher level of protection. We record the identified key wildlife areas in an extensive GIS database and present this information as digital maps that are available to view or print. The maps are used to support environmental assessment reviews and by managers and planners who need current accurate information about wildlife location and important habitats.

Project Description: What we're going to do

This year we will do WKA surveys in areas that are receiving considerable development pressure. These include surveys for sheep and raptors in the Dawson Range and for moose in the Upper Hyland moose management unit

Management Implications: Why we're doing it

Knowledge of wildlife key areas will provide the basis for recommendations on avoiding impacts or mitigating mining and other resource development activities. Data collected during these surveys in combination with other distribution data can contribute to habitat suitability modeling and can assist with developing population and habitat goals.

Project Activities: How we'll get it done

Details about this year's surveys are given in *Moose Census: Ross River* and *Dall's Sheep Monitoring along the Yukon River* project descriptions.

New information will be added to the WKA database.

Val Loewen, Habitat Inventory Coordinator

Aquatic Invasive Species

The introduction and colonization of aquatic invasive species (AIS) pose potentially serious threats to Yukon waterways. This project will help to mitigate the risk by raising awareness and understanding amongst the public whose activities are most likely to result in an accidental introduction of AIS.

Project Description: What we're going to do

This project promotes public awareness and prevention of the unintentional introduction or spread of aquatic invasive species. We will be gathering data and communicating the potentially high-risk behaviours surrounding fishing or boating practices (as examples) that can lead to unintentional introductions. Work this year will focus on development of communications materials to support greater understanding of the issues of a greater suite of AIS and how to prevent introduction, develop materials such as brochures, signs, and web content to assist with messaging.

Management Implications: Why we're doing it

Introduction of AIS could pose a significant risk to Yukon's economy and aquatic environments. This project will help to mitigate the risk by raising awareness and understanding of which activities are most likely to result in an accidental introduction of AIS.

This project flows from the 2010-2011 Yukon Aquatic Invasive Species Threats Assessment project and will support a future Environment Yukon AIS strategy.

Project Activities: How we'll get it done

We will develop and produce educational materials such as a pamphlet and advertising to increase awareness of AIS amongst the public and inform them as to how to help with prevention.

We will continue planning in support of a departmental strategy for AIS

Oliver Barker, A/Senior Fisheries Biologist

Celebration of Swans

A Celebration of Swans is more than just a week-long birding festival; it is an opportunity to raise awareness about the importance of key wildlife habitats, such as spring staging areas for waterbirds. *A Celebration of Swans* (1992) and the construction of Swan Haven (1994) were designed to increase public engagement on the issue of conservation and disturbance of this important habitat. *A Celebration of Swans* has proven to be an excellent tool for involving and informing the Yukon public about wildlife appreciation, conservation, and management issues.

Project Description: What we're going to do

Swan Haven annually hosts more than 3000 Yukon residents, including over 600 school children. Events are hosted in Whitehorse, Tagish, Carcross, Teslin, and Burwash. Celebration of Swans is the most popular and widely celebrated wildlife event in Yukon. During the third week of April, Celebration of Swans events include birding tours, a family activity weekend, bird identification and photography workshops, art exhibits, storytelling, guest speakers, contests, and peaceful swan watching opportunities around southern Yukon.

Management Implications: Why we're doing it

Creating awareness in the public and land claim public structures about wildlife, viewing opportunities, and biodiversity supports conservation and management programs. This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship.

Project Activities: How we'll get it done

School programs are delivered by contracted natural history interpreters.

The festival is produced in collaboration with local organizations, such as Yukon Bird Club, Girl Guides, etc., and volunteers from the community.

In 2007 the Swan Haven suffered extensive erosion damage due to Marsh Lake flooding. The deck has been moved back from the eroding bank and is being prepared for spring 2012. Work this year includes re-finishing the deck and stairs and installing fencing to prevent foot traffic further eroding bank.

Carrie McClelland, Wildlife Viewing Biologist

Fisheries Education and Communication

This project delivers educational programs and information materials to facilitate public involvement in fisheries management, policies, and initiatives. Education is a core component of fisheries management programs. It promotes participation, stewardship, and compliance with regulations. Education is consistently identified as the first step to addressing management challenges.

Project Description: What we're going to do

We will develop and deliver programs that educate anglers about overharvested and stressed populations as a way to decrease angling pressure without regulatory measures. This will be accomplished with signage at lakes and streams or targeted messaging about fish populations in jeopardy. Education initiatives will also focus on communicating information about regulations to improve the rate of compliance. This will be done along with regular enforcement activities and will focus on topics like the use of barbless hooks, and local size, catch, and possession limits.

Management Implications: Why we're doing it

The Status of Yukon Fisheries identifies the importance of public education. Education and communication are ongoing initiatives critical to effective management. An informed, engaged, and responsible angling public will benefit fisheries resources and anglers alike, and promote sustainable management and compliance with fisheries regulations.

Project Activities: How we'll get it done

Education components include:

- Public activities such as Family Fishing Weekend designed to promote fishing and engage young anglers
- Signage at lakes and streams informing anglers as to the status of populations
- Directed education and communication with anglers to address non-compliance rates
- Continued development of a freshwater fish interpretative program at the Whitehorse Rapids Fishway in cooperation with other agencies including co-sponsor talks about fish and fishing at the Fishway, interpretative materials including interactive fish and aquatic displays and brochures.
- Development of one or more short web-based videos addressing items such as fishing in stocked lakes, fishing for alternate species (i.e. whitefish), and components of Yukon stock assessments

Oliver Barker, A/Senior Fisheries Biologist

Fish and Wildlife Communications

This project co-ordinates and facilitates Fish and Wildlife Branch communication initiatives. It provides editorial support to technical staff to develop and deliver appropriate communication tools to achieve their program's conservation and management objectives.

Project Description: What we're going to do

This is an ongoing project. We will assist in developing and producing technical and plain language reports and other materials as needed for varied audiences (public, legislature, boards, and councils), establish and maintain publication review protocols and authorizations to ensure consistency and effective information transfer to the public.

A focus this year will be the production of web-ready versions of the amalgamated species and habitat management guidelines completed in FY 2011-12

Management Implications: Why we're doing it

Communication is central to all of the primary responsibilities of the Fish and Wildlife Branch. By producing and providing accessible, trustworthy, and useful information this project supports the meaningful participation of Yukon people in planning and decision-making processes.

This program assists with the numerous requests from the public, land claim Boards/Councils, other interested parties (Yukon Outfitters Association, Yukon Fish and Game Association, Yukon Conservation Society) including national and international organizations, for current, up-to-date information associated with Branch Programs.

Project Activities: How we'll get it done

We will provide editorial services for technical reports directly or through contractors and support the development of non-print (web-based) reporting tools.

We will produce final roll-up of species and habitat management guidelines following collaborative reviews completed by the appropriate sections.

Jean Carey, Co-ordinator Technical Reporting Program

Harvest Management Coordination

This project supports the collaboration with First Nation governments towards the establishment of harvest reporting systems and the development and implementation of coordinated harvest management plans.

Project Description: What we're going to do

The Harvest Management Co-ordination Program involves travel throughout Yukon, communication with First Nations, supporting or overseeing processes for developing plans and models, monitoring implementation, assisting in the development and maintenance of FN harvest reporting programs, and providing technical support and analysis.

Management Implications: Why we're doing it

Development of collaborative harvest management approaches will help address current management issues and help ensure long-term sustainability of harvested wildlife populations. The Southern Lakes Wildlife Coordinating Committee has recommended a coordinated harvest management plan within the Southern Lakes region. Harvest management planning is also a requirement of the Wolf Conservation and Management Plan (Goal 4).

Project Activities: How we'll get it done

We will regularly travel to meet with First Nation and community representatives. As the program becomes established we will organize working groups, workshops, and training sessions and produce products and information in support of plan development.

Dorothy Cooley, Wildlife Harvest Coordinator

Hunter Effort Survey

Harvest statistics alone do not provide a full picture of hunting activity. Knowing the hunting efforts and methods of Yukon hunters, including the number of active hunters, where and when they hunt, their success rates, and other characteristics will lead to a better understanding of hunted wildlife populations and allow us to make more informed management and harvest decisions.

Project Description: What we're going to do

We will work with the Yukon Bureau of Statistics to deliver a survey that is statistically rigorous and will provide sound and useful information. To simplify the questionnaire and analyses, we focus on hunters of different species on a rotational basis. This year, our efforts are focused on sheep and goat hunters.

Management Implications: Why we're doing it

Survey information will be used to inform future management and harvest discussions and decisions. We can respond more quickly and effectively to management issues, either through regulation, education, or information if we have current information about hunting practices.

Project Activities: How we'll get it done

Surveys will be mailed out in late November or early December (after hunting season closes) to all licensed Yukon resident hunters who acquired either a sheep or goat seal in 2012. Hunters who have not returned a survey by December 31 will be called and invited to complete the survey over the telephone.

Carol Foster, Wildlife Harvest Specialist

Porcupine Caribou Harvest Monitoring and Hunter Education

This project supports the operation of a Dempster Highway hunter check station and the delivery of Porcupine caribou herd hunter education programs.

Monitoring of the Porcupine Caribou hunt in Yukon is critical to assessing the status and effectiveness of harvest management actions implemented under the Porcupine Caribou Harvest Management Plan.

Project Description: What we're going to do

We will operate the check station on the south Dempster Highway for approximately 2 ½ months during peak fall hunting activity to record harvest and provide a contact point between the Department and active hunters.

The number of caribou harvested in Yukon, along with harvest data from partners, will be summarized to provide an overall harvest number for the herd and will be evaluated to determine if harvest if negatively affecting the herd.

Management Implications: Why we're doing it

We are obligated to undertake many activities in support of the Porcupine Caribou Harvest Management Plan (HMP) and the accompanying Implementation Plan, such as educational efforts on the HMP and Porcupine caribou management.

Monitoring of the Porcupine caribou hunt in Yukon is critical to assess the status and effectiveness of harvest management actions implemented under the HMP. We are committed to harvest planning and monitoring.

Project Activities: How we'll get it done

We will finalise a Porcupine caribou hunter education program and assist with delivering it in the communities.

We will summarize the number of caribou harvested in Yukon, along with harvest data from co-management partners to provide an overall harvest number for the herd and to determine if harvest is negatively affecting the herd.

The HMP will be implemented as per the Implementation Plan.

Martin Kienzler, A/North Yukon Regional Biologist

Reducing Wildlife Highway Mortality

Collisions with wildlife on Yukon highways result in a safety concern to both highway travellers and wildlife. The proposed Alaska Highway Pipeline and other mineral hauling activities will increase heavy truck traffic which in turn will increase the potential for vehicle-wildlife collisions on Yukon highways.

This project supports establishing a collaborative approach to investigate potential ways of reducing wildlife-vehicle collisions, including the use of a deterrent to ungulates licking road salt, signage alternatives, education campaigns, and right-of-way management techniques.

Project Description: What we're going to do

Discussions with Highways and Public Works, First Nations, and community members will attempt to identify problems and solutions for right-of-way management to reduce attractants near or on highways. These discussions will result in the development of a collaborative strategy to assess effectiveness in increasing driver awareness and reducing attractants.

Management Implications: Why we're doing it

Roadkills on Yukon highways are a conservation concern for small woodland caribou herds that are declining or have uncertain status. Many of their winter range intersects with primary highways in Yukon.

Reduced ungulate numbers on highways will make the roads safer for winter travellers.

When completed, the results of this project could inform how to better mitigate potentially adverse environmental impacts of mine developments and other industrial acitivities that relying on frequent highway haulage.

Project Activities: How we'll get it done

We will facilitate the establishment of a working group and working relationship with Yukon Highway Maintenance Branch to oversee this project and research alternative right-of-way management techniques.

Trials of supported techniques will be considered for 2013 and onward.

Matt Clarke, Liard Regional Biologist

Technical Reporting Program Development

This program works to provide Yukon people with accessible, trustworthy, and useful technical information to support their meaningful participation in planning and decision-making.

Project Description: What we're going to do

This is an ongoing project. We will produce the foundational reference materials that can be categorized as "Wildlife Management 101" for use by Boards, Councils, and interested members of the public. This will create an enhanced presence on the Internet and establish non-traditional avenues of information distribution, including interactive presentations and narrated slideshows, with a strong visual focus for a wide audience.

Management Implications: Why we're doing it

This program supports the departmental objective to improve the sharing and communication of data and information.

Project Activities: How we'll get it done

The aim is to build on products previously developed in a way that is responsive to emerging issues and needs. Products produced through this program are hosted on the department Internet site.

Jean Carey, Coordinator Technical Reporting Program

Valued Fish and Wildlife Components and Effects Monitoring

Yukon is undergoing unprecedented mineral exploration and development. Through the environmental assessment process, effects of the associated industrial activity are considered on a project by project basis. Given the concentration of multiple exploration activities and projects in some regions of Yukon, we must also address the need for long-term baseline data collection and monitoring to support the broader assessment of cumulative effects (CE) conducted through the Yukon's Socio-economic and Environmental Assessment Board (YESAB) review process.

Project Description: What we're going to do

This work will be carried out by both expert contractors and a project biologist (planned for a 2-year term). The program will include both strategic and operational components. This requires a review of our data inputs, their value and utility to the assessment process; addressing operational "bottlenecks" in data management; and making sound recommendations on proposed thresholds and mitigations.

Management Implications: Why we're doing it

Solid baseline information on key fish and wildlife indicators has been identified as a limiting factor in assessments for areas with high levels of industrial activity (e.g. White Gold, Rackla, and Yukon East).This program will enable the Fish and Wildlife Branch to develop a coordinated and well planned approach to data gathering and preparation using sound, science-based methods that allow for the identification of probable responses to be used in support of the assessment of industrial activities at a regional scale.

Project Activities: How we'll get it done

- Analyze our current approach to baseline data collection and monitoring of key fish and wildlife indicators for assessment purposes and identify areas for improvement (e.g. bottlenecks in data processing such as Wildlife Key Areas).
- Identify effective approaches to collecting fish and wildlife baseline data and trend information on key wildlife indicators that can be used by assessors and decision makers on potential impacts to key species.
- Review thresholds and mitigations for key indicators and develop recommendations on methods that could be applied by the Fish and Wildlife in our analysis of data.
- Support Fish and Wildlife Branch input to the discussion of a Yukon government cumulative effects framework.

Kelly Milner, Manager Regional Programs

Wildlife Harvest Management Administration

The Wildlife Harvest Management Program plays a pivotal role in the development and administration of wildlife harvest policies, guidelines, and programs that respect land claims and wildlife management agreements. The orderly and fair allocations of wildlife to Yukon residents and resource-based industries requires close co-operation between the Fish and Wildlife Branch and other branches of Environment Yukon, boards, councils, First Nations, wildlife users, interest groups, and the public.

Through the Wildlife Harvest Specialist and Harvest Technician, the Harvest Management program delivers quota administration, reviews harvest regulations, conducts harvester surveys, and shares information with First Nations, boards and councils, the public and stakeholders on harvest practices and regulations.

Project Description: What we're going to do

This programs funds the non-salary operational needs of the Wildlife Harvest Management Section, including travel, advertising, participation on the Quota Appeal Committee, and ongoing administrative expenses (i.e. postage, supplies, printing).

Management Implications: Why we're doing it

This program enhances effective working relationships with Renewable Resources Councils, First Nations, outfitters, and the public, relating to harvest management.

Ongoing advertising is necessary to promote and communicate new harvest management rules and to provide reminders about regulations and harvest reporting requirements.

Proposed changes to the Wildlife Act Regulations may result in requests from the communities for meetings to provide information about the background and rationale of the proposal.

We need to supply ongoing support for outfitter quota negotiations, including community meetings and Outfitter Quota Appeal Committee expenses.

Project Activities: How we'll get it done

We will update quotas for outfitters (several are due for review in 2012)

We will continue to inform the public about harvest-related issues through advertising and other effective means.

We will provide support for appeal processes for outfitters and trappers.

Carol Foster, Wildlife Harvest Specialist

Wildlife Viewing Community Projects and Products

The Wildlife Viewing Program works to raise awareness of wildlife through public presentations and events; developing on-site interpretation facilities (trails and roadside pullouts); producing pamphlets and brochures; providing information through websites or answering enquiries; participating in community initiatives, and working together with governments, industry, and NGOs.

Project Description: What we're going to do

To encourage stewardship, raise awareness of biodiversity issues, and develop local viewing opportunities, publications and sites are developed with partners. In 2012 the following products are anticipated to be developed:

- Watson Lake – Interpretation materials to be installed in Wye Lake park.
- Whitehorse – maintain existing signage in city's Significant Wildlife Areas as well as;
    - Provide interpretation and repair the Boreal Worlds Trail, pending routing decisions of new city streets.
    - Repairs to Clay Cliffs panels and the replacement of the Bat House panel at Chadburn Lake.
    - Provide interpretation/information at the Robert Service eagle's nest.
- Mayo – provide expertise and support for repair, replacement, and addition to Devil's Elbow and Horseshoe Slough interpretation.
- Dawson City – natural history interpretation will continue to be the focus of new interpretive developments including the completion and installation of signage for the 9th Street trail.
- Faro/Ross River – continue to work with the community to improve viewing opportunities. A Crane and Sheep information brochure will be developed for use at the Crane and Sheep Festival. Interpretive signage will be installed along Van Gorder Falls trail. Explore opportunities to upgrade the Dena Cho Trail interpretation.

Management Implications: Why we're doing it

Creating awareness in the public and land claim public structures about wildlife, viewing opportunities, and biodiversity supports conservation and management programs. This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship. Environment Yukon receives year-round requests for information on Yukon's wildlife and wildlife viewing opportunities.

Project Activities: How we'll get it done

- Watson Lake – Conduct an accurate assessment of current materials and infrastructure needs and provide support to replace and repair damaged interpretation materials. Install a bat house at Wye Lake along with interpretation panel in support of ongoing bat wildlife talks and research hosted in the community.
- Whitehorse – Pursue partnerships to provide enhanced educational opportunities at the Robert Service eagle's nest.
- Mayo – Continue work on the Minto Bridge site in partnership with the town of Mayo and Heritage Branch; update Keno City interpretive displays.
- Continue to work with the City of Whitehorse, Tourism & Culture and Yukon Parks on additional sites.
- Travel to RRCs to present on non-consumptive opportunities to manage wildlife; provide resources and support to RRCs to address non-consumptive wildlife management solutions.
- Work towards increased communication between the Department, Communities, Tourism, RRCs, YFWMB and NGOs in coordinating programs.

Carrie McClelland, Wildlife Viewing Biologist

Wildlife Viewing Events and Information

The Wildlife Viewing Program works to raise awareness of wildlife through public presentations and events; developing on-site interpretation facilities (trails and roadside pullouts); producing pamphlets and brochures; providing information through websites or answering enquiries; participating in community initiatives, and working together with governments, industry, and NGOs.

Project Description: What we're going to do

Throughout the territory, throughout the year, special events and programs, such as the *Wild Discoveries* series (since 1998), create opportunities for residents and visitors of all ages and interests to engage in watching and learning about wildlife. The major projects regarding events and information communication are:

- Mammal series - Critical updates to information provided on Environment Yukon website re: mammals of Yukon. Full assessment of needs and new research will be conducted to determine appropriate content.
- The raptors, owls, ptarmigan, grouse, caribou, elk and bison interpretation will all be reviewed and updated as needed. Interpretation development may include a combination of website information, panel development (i.e. Canyon Creek and Takhini Valley) and possibly printed matter as required. Specifically the following products will be developed:
    - Children's wildlife viewing guide (w/ Tourism)
    - Continued maintenance of highway sites with Tourism
    - Mushrooms (w/ Forestry)
    - Amphibians (w/ CWS and Parks Canada)

Management Implications: Why we're doing it

Creating awareness in the public and land claim public structures about wildlife, viewing opportunities, and biodiversity supports conservation and management programs. This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship. Environment Yukon receives year-round requests for information on Yukon's wildlife and wildlife viewing opportunities.

Project Activities: How we'll get it done

Mammal series - Critical updates to information provided on Environment Yukon website re: mammals of Yukon. Full assessment of needs and new research will be conducted to determine appropriate content.

The raptors, owls, ptarmigan, grouse, caribou, elk and bison interpretation will all be reviewed and updated as needed. Interpretation development may include a combination of website information, panel development (i.e. Canyon Creek and Takhini Valley) and possibly printed matter as required. Specifically the following products will be developed:

- Children's wildlife viewing guide (w/ Tourism)
- Continued maintenance of highway sites with Tourism
- Mushrooms (w/ Forestry)

We will continue to produce information brochures (including a revision of the Wildlife in Whitehorse brochure) and create interpretive signage in several locations including Watson Lake, Whitehorse, and Dawson.

- Program and event development, networking, training, promotion, and hosting occurs year-round though most events occur during peak wildlife viewing opportunities in spring, summer and fall.
- *Wild Discoveries* events hosted by the Wildlife Viewing Program (700+ people participated in 2011, over 10,000 since 1998). Individual event statistics are recorded for future recommendations. Overall program report developed – scheduled for Feb 2013.
- Includes Environment Yukon's participation in events such as Faro's Crane and Sheep Viewing Festival, the Biodiversity Forum, Parks Day, and Environment Fair.
- Accurate maintenance of publications, panels and upgrades to website information content.
- Updated web-based Yukon Mammal series.
- Environment Yukon receives year-round requests for information on Yukon's wildlife and wildlife viewing opportunities.
- Printed schedule of events entitled *Wild Discoveries* and *Yukon Biodiversity Awareness Month* brochures are distributed to all Yukon to households.

Carrie McClelland, Wildlife Viewing Biologist

Aishihik and Kluane Caribou Herd Fall Composition Survey

The Aishihik and Kluane herds are part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a Special Concern designation under national Species at Risk legislation.

The Kluane herd is a very small (less than 200 animals) and sensitive to extirpation (local extinction). This herd has experienced significant declines from historic highs and could be further impacted by pipeline development. High levels of activity around mineral claim staking and exploration also have potential to negatively affect population trends in Aishihik herd.

The Aishihik herd is one of two Yukon caribou populations that we have been monitoring long-term and is used as an indicator of productivity in other herds Yukon-wide. This herd has a history of intensive management and is currently managed by permit hunting.

Project Description: What we're going to do

We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible.

Management Implications: Why we're doing it

The Aishihik is permit-only harvest and Kluane is currently closed to licensed harvest. The productivity of these herds will affect the recommended harvest regime.

Successive years of poor productivity in the Kluane herd signals a decline that may require a need for emergency measures to protect this small herd from extirpation.

The trajectory of any trend in the long-term productivity of caribou herds could signal larger ecosystem level changes which would require changes in the harvest regime.

Annual caribou rut counts done on select herds throughout Yukon provide an overall assessment of the status of Northern Mountain caribou in the territory and contribute to long- term ecological monitoring which will let us track changes mediated by climate shifts.

Project Activities: How we'll get it done

We will conduct the surveys using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered they

are classified into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Population Monitoring, Movements, Habitat Use, and Impacts of the Aishihik Wood Bison Herd

In Yukon it is a challenge to manage wood bison populations in a way that provides for their recovery (as set out by the federal Species at Risk Act) while addressing community concerns and allowing local people to benefit from the resource, primarily through hunting opportunities.

Project Description: What we're going to do

This is an ongoing project that is necessary to ensure that this species at risk is managed correctly while experiencing the current high harvest rates.

This year, the Aishihik wood bison project has 4 components. Some aspects, such as the study of competition between bison, moose, and caribou, however, are short-term and this is anticipated to be the final year of these studies.

We will monitor population trends by doing an aerial composition count in July, when animals are aggregated in open, alpine habitats. GPS collars will be replaced with long-lasting VHF collars. This will substantially reduce our need to capture animals for collar replacement. April and July are the most efficient periods to capture bison by helicopter.

We will complete the assessment of the impact of reintroduced wood bison on caribou and moose by examining potential competition between these species on their shared ranges. This will entail final analyses of collected data and reporting.

We will monitor the movements and spatial distribution of wood bison to obtain better information on the distribution (including range expansion and shifts in range use) and habitat use of populations. This will require collared bison relocation periodically throughout the year by aircraft.

We will monitor the health and genetic status of wood bison and contribute data to national initiatives to assess these small, reintroduced populations that are isolated from other populations. This will be accomplished by working with a target group of key bison hunters as participants in a focuses sample collection program.

Management Implications: Why we're doing it

This information will be used in the following ways, all of which are contained in the DRAFT Yukon Wood Bison Management Plan and the DRAFT National Wood Bison Recovery Strategy:

- Provide data to calculate an Annual Allowable Harvest that meets the goals of the territorial and national management plans for wood bison;

- Provide data to better understand the spatial distribution of wood bison and monitor range expansion and shifts in range use;
- Provide data to delineate key habitat of wood bison, as set out under the federal *Species at Risk Act*;
- Provide data to examine potential competition between wood bison and other ungulates on their shared range (primarily moose and caribou); and
- Contribute data to national initiatives to assess the health and genetic status of these small, reintroduced populations that are isolated from other populations.

Project Activities: How we'll get it done

We will do an aerial composition count in July to monitor population trends

We will complete the analyses of the data collected to assess the impact of reintroduced wood bison on caribou and moose.

Flights will be done in April, July, October, and February to monitor the movements and spatial distribution of collared wood bison aerial bison relocation. Updated location maps will be available for public use during the hunting season.

We will develop a sample collection program for delivery by a group of key bison hunters. Hunters will be invited to participate in a workshop in October.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Chisana Caribou Herd Fall Composition Survey

The Chisana caribou herd is a relatively small herd (about 700 animals) which has experienced significant declines from historic highs. We have made substantial efforts to recover the population. A high level of interest in mineral claim staking and exploration in the northern part of this herd's range has potential to negatively affect population trends.

Project Description: What we're going to do

This is an ongoing monitoring project. We will conduct a composition survey during the fall breeding season (late September to early October) when males and females are grouped together and are found on high alpine breeding grounds, making animals more visible.

Management Implications: Why we're doing it

We will use the observed productivity of this herd to make recommendations about the harvest regime. The harvest regime for Chisana requires annual fall composition survey information.

Successive years of poor productivity in a caribou herd may indicate a decline requiring careful harvest management and further population investigation. The annual herd composition indicates likely population trends.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

Surveys are conducted using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Work will be done at the end of September/beginning of October depending on weather.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Collaborative Management of Wood Bison in Yukon

This program supports the ongoing work of the Yukon Wood Bison Technical Team (YWBTT). The YWBTT facilitates an inclusive process among relevant management agencies and councils to make recommendations toward the adaptive management of wood bison – a species that causes concerns to communities and is the focus of a popular resident hunt.

The primary responsibility of the YWBTT is to implement the Yukon Bison Management Plan and support Environment Yukon's adaptive management framework for wood bison. Specifically, the team recommends an Annual Allowable Harvest (AAH) of wood bison and strategies for meeting the harvest. The team also develops management plans for all Yukon populations of wood bison. Sharing information and developing communication materials are an important part of the YWBTT activities.

Project Description: What we're going to do

We will continue to support the activities of the YWBTT in fulfilling their mandate. The YWBTT develops recommendations through the technical team meetings and provides those recommendations to the Yukon Wood Bison Management Team.

Management Implications: Why we're doing it

Wood bison are ranked as Threatened under Species at Risk legislation. The work of the YWBTT will serve to provide an inclusive process among relevant management agencies and councils to make recommendations toward the adaptive management of this Threatened species that causes concerns to communities.

Project Activities: How we'll get it done

We will support the participation of representatives from the Fish and Wildlife Branch on the YWBTT. The team will be developing an AAH for the 2012/2013 hunting season and developing recommendations for the harvest regime for the 2012/2013 hunting season.

The team will also develop information materials such as the *Bison Banter* newsletter.

Tom Jung, Senior Wildlife Biologist (Biodiversity)

Dall's Sheep Monitoring in the Ketza River area

Sheep populations in the vicinity of the Ketza River mine property were the focus of a relatively comprehensive sheep population and habitat study in the late 1980s. Results of an aerial survey in 2007 suggested that habitat selection was possibly affected by mining activity. The Ketza River mining project is about to undergo an adequacy review with the stated intent of reopening the Ketza mine, and current information is needed to inform this process.

Project Description: What we're going to do

Standard aerial sheep survey techniques will be used. Two separate surveys that identify sheep distribution during the non-winter months, when mining/ exploration activities typically take place, will be completed.

Management Implications: Why we're doing it

Current information about group size, group connectivity, and movement routes is needed to inform and to mitigate potential impacts of renewed development on sheep using this range. Specifically, current distribution of sheep in relation to known sensitive habitats will required baseline information with which to evaluate displacement of sheep and assess potential consequences of increased mining and associated activity. Population information will support the assessment of sustainable harvest rates for this population.

Project Activities: How we'll get it done

Aerial surveys will be conducted in early June and late June to early July.

We will document the total number of sheep seen, their distribution, and population composition. Parturition (birth) rates may be obtained from the lambing survey (June) which can be compared to lamb: nursery sheep ratios seen during the post-lambing (July) survey to assess neonatal lamb survival.

A summary report of the 2012 surveys will be prepared by October 2012. An assessment of this work relative to historical sheep population information for this area will be completed to determine population status and to assess whether harvest of this population is sustainable.

Survey information will be integrated into the WKA database, if applicable.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Dall's Sheep Monitoring along the Yukon River

Small groups of Dall's sheep occur at the south end of the White Gold exploration region (Klondike Plateau/Dawson Range). These sheep do not live in typical sheep habitat, but instead occur along the Yukon River near the confluences of the White, Stewart, and Yukon rivers. Little is known about these sheep and, in particular, how they move along the rivers. Given their small size and relative isolation, these groups may be at a greater risk of disturbance and may be more sensitive to a loss of connectivity among groups.

Project Description: What we're going to do

Trails and movement routes will be identified and mapped. We will use DNA analyses to assess connectivity among groups and to obtain a population estimate. This is a novel approach to sheep population estimates, and is intended as a trial as a lower-cost alternative to helicopter surveys.

Management Implications: Why we're doing it

Baseline information about group size, group connectivity, and movement routes is needed and can be used to mitigate potential impacts of development on these sheep.

Project Activities: How we'll get it done

Personnel will travel along the Yukon River in June, July, and August to locations of known sheep groups.

Biological samples (fecal pellets and/or hair) will be collected for laboratory DNA analyses. At least 3 sampling sessions are needed as "recapture" sessions for the mark-recapture population estimate.

Trails and movement routes will be identified and mapped using GPS.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Elk Monitoring and Tick Management

Elk were introduced to Yukon in the 1950s and occur in two herds: the Braeburn herd and the Takhini Valley herd. After maintaining relatively low and stable populations for many years, elk are now increasing in numbers. The Management Plan for Elk in the Yukon was completed in June 2008. The first goal of the plan is to maintain healthy and viable populations of free-ranging elk in Yukon. Actions under this goal include the ongoing monitoring of elk to determine population size, composition and survival, as well as the occurrence of disease and parasites, such as winter ticks (*Dermacentor albipictus*).

Project Description: What we're going to do

This project has two components. The first is to obtain elk, moose and deer hides in order to evaluate the distribution and prevalence of winter ticks within the key elk ranges and elsewhere in Yukon. This evaluation can be used to assess the relative threat to moose and caribou from ticks carried by elk, deer, and other species. The second is to conduct regular monitoring of the herds to determine their size, location, movement, and distribution.

Management Implications: Why we're doing it

The abundance and distribution of ticks throughout the territory and between host species is an important consideration for the intensity of future elk management actions.

Monitoring elk distribution, abundance and population composition supports the objectives identified in the Elk Management Plan, particularly harvest and reduction of elk-agriculture conflicts. This information is also important to determine if we are achieving our harvest management objectives.

Managing for a stable population and a small harvestable surplus is supported by the plan and desirable both for residents as a hunting opportunity and for land holders looking to dissuade elk from their properties.

Project Activities: How we'll get it done

We will be gathering hides through the fall and late winter in collaboration with hunters and the Conservation Officer Services Branch. The Animal Health program will process the hides to determine tick numbers.

Composition and recruitment assessments for the Takhini and recruitment for the Braeburn herd during the fall of 2012 will be used to support harvest management recommendations.

Periodic aerial monitoring of radio-collared elk will assist in identifying annual elk distribution and movement patterns and key elk habitats.

Survey, distribution and movement data will be compiled and presented to the Elk Technical team and management committees for their consideration in management.

Winter tick abundance and distribution simulation models will be developed in conjunction with University of Calgary and Princeton University.

Rick Ward, Moose, Elk, and Deer Biologist

Ethel Lake Caribou Herd Fall Composition Survey

Recruitment into the Ethel Lake caribou herd has been chronically low since the late 1990s. Concerns about this herd led to a voluntary hunting closure that has been in place since 2002. We have closely monitored this small herd (about 300 animals) with almost yearly rut counts (17 since 1993), giving us long-term trend data. Before harvest of this herd can resume, the communities of Mayo and Pelly Crossing require evidence of several years of good recruitment.

Project Description: What we're going to do

We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible.

The data will be added to the database of caribou locations and will be used to map key rutting areas for the Ethel Lake herd.

Management Implications: Why we're doing it

We will use information about recruitment into this herd to guide our decisions about when to end the voluntary hunting closure.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

This survey will take one day and will be completed in late September or early October. We will use a helicopter to survey the McArthur Range, Kalzas Twins, and ridges in between those mountain blocks, where caribou are known to congregate during rutting season. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Finlayson Caribou Herd Fall Composition Count

The Finlayson caribou herd was the focus of an intense recovery program from 1983 to1989. A population survey in 2007 estimated that there were 3,077 +/- 5.6% animals in the herd, almost half the number there were in 1990 at the end of six years of wolf control.

Project Description: What we're going to do

This is an ongoing monitoring project. We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible.

Management Implications: Why we're doing it

Recent applications to develop natural resources (i.e. mineral development) within the herd's range have highlighted the need to have current population information to inform management decisions and recommendations to mitigate development impacts.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

The survey will be carried out over 2 days in late September or early October. Surveys are conducted using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Fortymile Caribou Herd Monitoring

Since the mid-1990s, the Fortymile caribou herd has been the focus of a population recovery program. A number of Alaskan and Yukon agencies have been working together to plan and implement strategies that support the herd's ability to grow and reoccupy ranges they abandoned years ago. This herd is primarily managed by the Alaska Department of Fish and Game (ADFG) in Tok, Alaska. The 1995 Fortymile Caribou Herd Management Plan identified range expansion as one important indicator of herd recovery.

This project documents the Fortymile caribou herd's current winter range use in Yukon. Caribou abandoned much of their historical range in Yukon as the herd size shrank in the 1930s. As the herd size slowly increases, we need to document reoccupation of their historic Yukon range.

Project Description: What we're going to do

This is an ongoing project, begun in 2003. We will continue to monitor the herd to document movements and range use if, and when, the caribou cross into the Yukon in the fall.

Management Implications: Why we're doing it

Because there are so few Fortymile caribou in Yukon, we closed the hunting season in 1995 in support of the management plan. Monitoring will determine if changes in herd size and Yukon range use may suggest we consider re-opening hunting of this herd.

We share the responsibility of managing this herd with Alaskan government agencies.

Project Activities: How we'll get it done

We will conduct two flights using radio telemetry to locate caribou that have been radio collared by Alaskan biologists, once in early fall when caribou typically cross the Alaska-Yukon border into Yukon and once in late winter before the caribou move back into Alaska.

Martin Kienzler, A/North Yukon Regional Biologist

Goat Survey in the Itsi Range

The Itsi Range (primarily GMS 11-01) is home to Yukon's northernmost mountain goat range. Harvest of the population is currently modest, but with a pending upgrade of the North Canol road to all-season access and increasing exploration and mining activity, this may change.

Project Description: What we're going to do

Previous aerial surveys (most recently in 1994) were time-limited and found few goats, in contrast to local observations. An intensive survey is warranted to update distribution and population information.

Management Implications: Why we're doing it

Current population information is needed to evaluate population status. Given that exploration is at very early stages and harvest is currently modest, these results may represent a baseline condition

Distribution information is needed to refine Wildlife Key Area maps, which are used to inform industry and regulators in the environmental assessment processes and will allow managers to evaluate potential effects of development on goats in the area.

Project Activities: How we'll get it done

In July 2012, an intensive aerial (helicopter-based) distribution and composition survey will be conducted in GMS 11-01 and adjacent areas of 11-02 and 11-03 where suitable goat habitat is located. Standard aerial survey methods will be used.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Greater Nahanni Caribou Project

This is Year 5 of a 5-year program looking at the seasonal distribution, number, and status of caribou in the Greater Nahanni area. Increasing industrial development, the relative accessibility of these herds, and indications of declining populations were factors in establishing this project. Other managing jurisdictions share these concerns and have provided annual funding contributions to this project.

Project Description: What we're going to do

The objective of the multi-year study is to estimate the size of the herds, their sex and age structure and to assess herd movements and seasonal distribution.

We will continue to gather information on location, distribution, and movement from the satellite radio-collared caribou until the radio-collars drop off as programmed. Radio-collars will be retrieved as the final field activity of this project.

Management Implications: Why we're doing it

We will use population information to evaluate herd status and support harvest management planning and assessment. Distribution information will be used to evaluate potential effects of development on caribou in the region. Information will also be used to inform industry and regulators about caribou population dynamics and distribution. The Yukon Fish and Wildlife Management Board has deferred any regulation changes for caribou in this area pending the outcome of this status assessment.

Project Activities: How we'll get it done

We will continue to gather information on location, distribution, and movement from the satellite radio-collared caribou until the radio-collars drop off as programmed. Radio-collars will be retrieved as the final field activity of this project.

The final project report describing all work carried out for the project will be completed this year and results will be communicated to the First Nations, stakeholders and the YFWMB following internal review.

Troy Hegel, Caribou, Sheep and Goat Biologist

Ground-Based Moose Monitoring

Aerial surveys of moose are costly and can only be conducted about every 5 years in priority areas. In areas with significant harvest, more regular monitoring of moose populations is desirable. Ground-based monitoring is a cost-effective way of monitoring calf survival and it actively involves the local community in keeping track of the health of the local moose population. We have done ground-based monitoring of moose in the Mayo area since 2001, and in Pelly and Carmacks since 2007.

Project Description: What we're going to do

Twenty of the most active local hunters in each community will be asked to keep track of all moose they see between August and October.

Management Implications: Why we're doing it

We will use information about moose calf survival as a part of our assessment of moose population health in the moose management units near the three Northern Tutchone communities.

This monitoring is recommended in the 2008-2013 *Community-based Fish & Wildlife Management Plan for the Na-Cho Nyäk Dun Traditional Territory* and in the *Community-based Fish and Wildlife Work Plan for the Little Salmon/Carmacks First Nation Traditional Territory, 2011-2015*, and by the Selkirk May Gathering.

Project Activities: How we'll get it done

This is an ongoing project.

Hunters are provided with booklets and maps in July-August for data collection. Booklets are gathered in November.

We prepare summaries of data in December-January and distribute them before March. We will also present the results verbally at meetings of the Mayo District RRC, Selkirk RRC, Carmacks RRC, and at the Selkirk May Gathering.

Mark O'Donoghue, Northern Tutchone Regional Biologist

Hart River Caribou Location Monitoring

The Fish and Wildlife Branch monitors radio-collared Hart River caribou during the hunting season. Depending on their locations in relation to caribou from the Porcupine herd, we adjust harvest regulations to make sure that Hart River animals are not over-harvested.

The Hart River caribou herd is very accessible to hunting near the Dempster Highway. This accessibility means that high numbers could be harvested, especially in years when the Porcupine caribou do not winter near the Dempster.

Project Description: What we're going to do

This is an ongoing project. We will locate animals in the Hart River herd using radio telemetry and compare these locations with those of Porcupine caribou to determine the most appropriate harvest regulations. We will concentrate our flights in the overlap area with the most access for hunters. Once the locations have been established we will use this information for in-season regulation adjustments such as the emergency closures when necessary.

The data will be added to the database of caribou locations and will be used to map key rutting and wintering areas for the Hart River herd.

Management Implications: Why we're doing it

Harvest regulations for the Porcupine caribou herd are adjusted if necessary by implementing emergency closures if mostly Hart River caribou are along the Dempster Highway.

We will be able to use location information to map key rutting and wintering habitats for Hart River caribou and are used in environmental assessments and land use planning processes.

Project Activities: How we'll get it done

We will locate radio-collared Hart River caribou from fixed-wing aircraft twice in the fall and early winter as Porcupine caribou migrate into their winter range. Each flight takes one day. The flights may be supplemented by ground-based telemetry.

Survival of Hart River caribou will be estimated from survival rates of collared animals using standard survival analyses.

Martin Kienzler, A/North Yukon Regional Biologist

Klaza Caribou Studies

Renewed claim-staking activity combined with ongoing mining operations in the Klondike Plateau area has highlighted the need for current information on the size, status, distribution and range use of the Klaza caribou herd. This information is needed to support future project assessments and management recommendations in this increasingly industrialized landscape.

Project Description: What we're going to do

This project will follow a phased approach, allowing data evaluation at key milestones.

Over the first year, radio-collars will be deployed as "marks" that will be used to evaluate population size through a mark and resight census. With marked caribou, individual female caribou can be tracked through spring and fall to determine key calf production and survival estimates needed for the population status assessment. These individual-based assessments will be complemented by fall population level composition counts, which, when coupled with past information and mortality rates from collared females, will establish the basis for detecting changes in this herd over the study period.

These key assessments will be evaluated following this first phase of this project (within the first three years). We will then consider if additional information is needed to increase our understanding of the herd's use of this range and also which factors need to be considered for land use assessments and potential mitigation.

Management Implications: Why we're doing it

Caribou distribution and herd concentration information will support land management recommendations by providing a current evaluation of key caribou ranges. These will be relevant to the current mining activity and the mineral staking activity and can be contrasted with former key area descriptions and with local knowledge within the community.

These data will provide a foundation or basis for future assessments of avoidance and effects this herd may be experiencing under the current land use activity. Gathering fine grained or spatially accurate information on caribou habitat use will enable an examination of habitat selection by caribou in relation to landscape factors such as habitat quality, access corridors, or level of activity on existing or future potential corridors.

These data will be necessary in any analysis that aims to describe options to mitigate impacts to caribou that future large scale land use projects, specifically access and mining footprint. This research will address a number of objectives in the National Northern Mountain Caribou Management Plan including assessing

environmental and cumulative effects, identification of important habitats, and assessment of herd status.

An updated population estimate is needed to address community concerns on harvest in the newly accessible range and the lack of inventory information on this herd for more than a decade. In addition to current herd size, the trend established from a short term assessment of production and recruitment will also advise management direction in the near future.

Project Activities: How we'll get it done

By deploying satellite GPS radio-collars, a cost-effective assessment of movement rates and animal distribution will be gathered via frequent satellite download of GPS information in each collar.

Overall results support modeling landscape characteristics and habitat selection to demographic rates, relating habitat availability to populations. Existing key area maps will be enhanced with each successive year's data.

Troy Hegel, Caribou, Sheep and Goat Biologist

Laberge Caribou Collar Retrieval

Four GPS collars deployed on Laberge caribou in March 2011 are scheduled to drop off at the end of July 2012. The collars must be picked up to retrieve the detailed spatial data gathered and stored on board the collars since their deployment.

Project Description: What we're going to do

Radio-collars that were deployed in March 2011 are scheduled to drop-off at the end of July 2012. This project supports the retrieval of these collars using an R44 helicopter, outfitted with telemetry equipment.

Management Implications: Why we're doing it

The location data we retrieve will complement existing data from Carcross herd animals. We need to determine if the location data supports a biological distinction between the herds. This distinction has important implications for the conservation of caribou because while the Carcross herd is protected from harvest pressure through the Southern Lakes Caribou Recovery Program, animals from the Laberge area are open to hunting through part of their range. If the data show that Laberge animals are actually a faction of the Carcross herds, then harvest of Laberge caribou will have to be taken into account when considering harvest pressure on the Carcross herds.

The data collected on board in the collars will be downloaded and input into the Southern Lakes GPS caribou collar location database for spatial analyses and used to inform recommendations on land use in the region.

Project Activities: How we'll get it done

One day of flying will be used to retrieve all 4 collars deployed on Laberge animals.

Shawn Taylor, Southern Lakes Regional Biologist

Moose Census: Richardson Mountains

The moose population in the Richardson Mountains is vulnerable to over-harvest and potential land use activities and developments because their distribution is clumped and suitable habitat is patchy. We need to periodically re-survey the area to monitor any changes in moose abundance and to assess the impact of harvest or land development on this population.

This is a co-operative project with the Gwich'in Renewable Resources Board and the Government of the Northwest Territories.

Project Description: What we're going to do

In late winter, we will use a helicopter to survey suitable moose habitat along the major river drainages straddling the Yukon/ NWT border, between Blow River in the west and Aklavik in the east, and north from the McDougall Pass area to Shingle Point on the North Coast.

Our methods are the same as those used in previous surveys, so we will be able to compare the information and determine if moose numbers or distribution has changed.

Management Implications: Why we're doing it

Recently, an issue has arisen surrounding the continuance of the order-in-council that withdraws portions of the Yukon North Slope from development. This has highlighted the need to discuss requirements needed to achieve conservation and Inuvialuit subsistence and lifestyle needs. Improved and updated resource information is needed to inform these discussions.

The reported moose harvest appears to be within sustainable limits, but if moose harvest increases due to low numbers of caribou in the area or because of a limitation on caribou harvest opportunities then over-harvest of moose in the area may become a concern.

Documentation of use of late winter habitat in this survey will allow us to confirm the long term use of these ranges in the Richardson Mountains.

Project Activities: How we'll get it done

Survey flights will be done in late winter (February-March), and will take approximately one week to complete. We will count and classify all moose seen (adult or calf), and use a GPS to record their locations.

Martin Kienzler, A/North Yukon Regional Biologist

Moose Census: Ross River

The Ross River Moose Management Unit (MMU) extends north from Ross River to the South Macmillan River and is bisected by the North Canol Road. Local concern has been expressed about increased hunting traffic in this area and the need to monitor and potentially regulate harvest of moose. An updated population assessment is needed.

This area has existing and developing mineral exploration activities. Potential upgrades to the North Canol Road to support industrial traffic are anticipated as these developments progress. The road is also a popular moose hunting corridor.

The last moose census in this area in 2001 showed that moose abundance has continued to decline since 1989, shortly after the cessation of wolf control in the Ross River area.

Project Description: What we're going to do

This project will follow standard early winter moose inventory techniques. The Ross River MMU extends from the South Macmillan and Riddell rivers south to Ross River; and from Laforce Lake eastward to Otter Creek and the Prevost River. It includes GMSs 4-49, 4-40, 4-39, 11-07, 11-06 and 11-02.

Management Implications: Why we're doing it

Recent applications to develop natural resources, the resulting improvement in access and local concern regarding harvest pressure in this area highlight the need to collect current information on moose in the Ross River area. A current population estimate will allow us to determine if present harvest levels are sustainable. If declines have continued since the last survey, potential measures could include reduced harvest pressure on moose through limitations on licensed hunting and working with First Nations to limit First Nation harvest, and mitigation measures for increased and improved access.

Project Activities: How we'll get it done

This survey will be carried out over 10 days in early winter (November) using two fixed-wing aircraft and pre-determined survey blocks. Moose group locations will be recorded and classified by sex and age. The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Matt Clarke, Liard Regional Biologist

Moose Survey: Rackla Late-Winter Habitat

The upper Stewart River watershed has been extensively staked for mineral exploration in recent years and there is a proposed road to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development.

Knowledge of key areas for moose wintering will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Project Description: What we're going to do

We will use helicopters to survey an area in the upper Stewart River watershed, mostly along the Beaver and Rackla Rivers, where there is a high level of mineral staking and exploration.

Management Implications: Why we're doing it

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The WKA Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can be maintained with little or no impacts.

Data collected during these surveys in combination with other distribution data contribute to habitat suitability modeling.

Knowledge of regional wildlife abundance and the distribution of important and high quality habitats will provide the foundation for developing population and habitat goals.

Project Activities: How we'll get it done

This survey will take 6 days for 2 crews to complete, and will be conducted in late February or March.

We will fly transects spaced at about 1-km intervals and record waypoints for all ungulates and ungulate tracks observed; we anticipate mostly moose in this area, but will likely also see some caribou and sheep as well.

Mark O'Donoghue, N. Tutchone Regional Biologist

Moose Census: Lower Stewart River West

The Klondike Plateau and Dawson Range have been extensively staked for mineral exploration in recent years and there is a proposed all-season road to provide access to these claims. We lack information about important wildlife populations and habitats in this area for assessing potential effects of development.

Information from this survey on moose densities, population composition, and distribution will provide us with a baseline for assessing changes in the moose population associated with mining and access development in the future.

Project Description: What we're going to do

This is a one-year project. We will conduct an aerial census survey of the western Lower Stewart River and northeastern White River Moose Management Units (MMU) using standard Yukon moose survey methods. Biologists will use the survey results to assess moose distribution, abundance, and population composition.

We will evaluate estimated density and population composition in this area relative to known harvest levels and composition thresholds in the moose management guidelines, and map the early-winter distribution of moose.

Management Implications: Why we're doing it

Knowledge of important areas for moose in early winter will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Data collected during these surveys in combination with other distribution data contribute to habitat suitability modeling.

This survey is proposed as part of the draft *Proposed Fish and Wildlife Baseline Data and Monitoring Plan: Klondike Plateau-Dawson Range*.

Project Activities: How we'll get it done

This survey will take two crews 11 days to complete, and will be conducted in late October or November. The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Mark O'Donoghue, N. Tutchone Regional Biologist

Porcupine Caribou Monitoring

Government of Yukon, working with our management partners conducts various biological studies to provide biological information for management purposes.

Project Description: What we're going to do

Caribou are classified by sex and age class during the composition counts. During the late winter field work, caribou are captured to deploy radio collars. We purchase and analyze hunter-submitted samples for body condition through the winter, and blood samples from captured caribou are tested as part of ongoing monitoring of disease prevalence.

Management Implications: Why we're doing it

Information gathered during research and monitoring activities feed into an assessment of herd status which determines harvest management actions.

Project Activities: How we'll get it done

During the late winter (March) composition count, we estimate over winter survival of calves. In years when the Alaskans do a photo census, we will do a rut (October) composition count to estimate the full ratio. Estimates from both composition counts feed into the population model and are used during the Annual Harvest Meeting hosted by the PCMB.

Hunters submit Body Condition samples from harvested caribou to be used as an index of caribou and range condition. These are standard body condition monitoring protocols from the Circum Arctic Rangifer Monitoring and Assessment (CARMA). This will add information to the database started in 1991.

During the March field work, we also capture caribou to deploy any collars purchased by cooperating agencies. Blood samples from captured caribou are tested as part of ongoing monitoring of disease prevalence, ongoing since the 1970s.

Martin Kienzler, A/North Yukon Regional Biologist

Tatchun Caribou Herd Fall Composition Survey

Harvest of caribou in the Tatchun herd is at or above maximum sustainable levels, and the population estimate of this herd is ten years old. The Fish and Wildlife Branch has closely monitored this fairly small herd (about 600 animals) with almost yearly fall composition surveys (16 since 1993). It is one of several herds in Yukon that gives us long-term trend data.

The Tatchun caribou herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a *Special Concern* designation under national Species at Risk legislation.

Project Description: What we're going to do

This survey will take one day and will be completed in late September or early October. The data will be added to the database of caribou locations and will be used to map key rutting areas for the Tatchun herd.

Management Implications: Why we're doing it

We use information about recruitment into this herd to guide our decisions about herd health and setting outfitter quotas, in the absence of a recent population estimate.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

We will use a helicopter to survey the Glenlyon Range, Little Salmon Range, Tummel Hills, and Tatchun Hill where caribou are known to congregate during rutting season. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep, and Goat Biologist